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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/375,309	08/16/1999	PIERRE ZAKARAUSKAS	10514/002001	4869

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EXAMINER

ARMSTRONG, ANGELA A

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 08/01/2003

21

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/375,309

Applicant(s)

ZAKARAUSKAS, PIERRE

Examiner

Angela A. Armstrong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 20.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 01, 2003 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US Patent No. 5,680,508) in view of Miseki et al. (US Patent No 6,167,375), and further in view of Gupta et al (US Patent No. 5,949,888).

3. Regarding claims 1, 3 and 5

Transforming input signal to a time-frequency representation is taught by Liu at Figure 1, element 19;

Estimating background noise is taught by Liu at Figure 5: col. 10, lines 24-36;

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Comparing time-frequency representation with a signal model is taught by Liu at Figure 5: col. 10, lines 16-23;

Determining a template in the signal model is taught by Liu at Figure 5: col. 10, lines 16-23;

Replacing the acoustic input signal is taught by Liu at col. 10, lines 16-23.

Liu does not specifically teach transient detectors to detect transient duration. However, detecting transient or noise duration was well known in the art.

In a similar field of endeavor, Gupta teaches a method and device for comfort noise generation for echo cancellers, which implements hangover delay periods and signals within the delay period are excluded from the noise buffer. Gupta teaches that such exclusion provides constant and continuous background noise and avoids perceptible variations in the noise characteristics of the channel.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the system of Liu to implement detecting noise duration as taught by Gupta, for the purpose of ensuring the detected background noise is actually background noise and not other variations, thereby ensuring an adequate background noise estimation and an improved speech enhancement system.

Liu does not specifically teach replacing the acoustic input signal with a low-noise output signal comprising a mix of the input signal and the best matching template. However, refer to Maseki et al. who teach a method for encoding and decoding a speech signal including background noise wherein an input signal is separated into a speech component and a background noise component (isolating sounds) and a multiplexer multiplexes the data of the

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two components to produce a low-noise output signal (abstract), for the purpose of efficiently encoding and decoding a speech signal which includes background noise such that the compressed speech is as close to the original speech as possible (col. 1, lines 6-11).

Therefore, it would have been obvious to one of ordinary skill at the time of invention to modify the speech enhancement system of Liu to implement replacing the acoustic input signal with a low-noise output signal comprising a mix of the input signal and the best matching template, as suggested by Miseki et al, for the purpose of efficiently encoding and decoding a speech signal which includes background noise such that the compressed speech is as close to the original speech as possible, as suggested by Miseki et al.

4. Claims 2,4 and 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US Patent No. 5,680,508) in view of Fink et al (Us Patent No. 5,933,801), and further in view of Gupta US Patent No. 5,949,888).

5. Regarding claims 2, 4, and 6

Transforming input signal to a time-frequency representation is taught by Liu at Figure 1, element 19;

Liu does not specifically teach isolating transient sounds and including transients in the estimation of the background noise. However, refer to Fink et al. who teach a method of transforming a speech signal which separates a speech signal into two signal parts (which includes a transient portion) and suggest implementation of the method as being extremely expedient for synthesizing well-defined sounds (abstract).

Therefore, it would have been obvious to one of ordinary skill at the time of invention to modify the speech enhancement system of Liu to implement transient detection and estimation in conjunction with signal and background noise estimation, for the purpose of improving synthesis, as suggested by Fink et al.

Comparing time-frequency representation with a signal model is taught by Liu at Figure 5: col. 10, lines 16-23;

Determining a template in the signal model is taught by Liu at Figure 5: col. 10, lines 16-23;

Synthesizing a signal based on the best matching template is taught by Liu at Figure 2, element 25: col. 2, lines 1-2; col. 10, line 23.

Liu does not specifically teach transient detectors to detect transient duration. However, detecting transient or noise duration was well known in the art.

In a similar field of endeavor, Gupta teaches a method and device for comfort noise generation for echo cancellers, which implements hangover delay periods and signals within the delay period are excluded from the noise buffer. Gupta teaches that such exclusion provides constant and continuous background noise and avoids perceptible variations in the noise characteristics of the channel.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the system of Liu to implement detecting noise duration as taught by Gupta, for the purpose of ensuring the detected background noise is actually background noise and not other variations, thereby ensuring an adequate background noise estimation and an improved speech enhancement system.

6. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US Patent No. 5,680,508) in view of Fink et al (US Patent No. 5,933,801) and Miseki et al. (US Patent No 6,167,375), and further in view of Gupta (US Patent No. 5,949,888).

7. Regarding claims 7-9

Transforming input signal to a time-frequency representation is taught by Liu at Figure 1, element 19;

Liu does not specifically teach isolating transient sounds and including transients in the estimation of the background noise. However, refer to Fink et al. who teach a method of transforming a speech signal which separates a speech signal into two signal parts (which includes a transient portion) and suggest implementation of the method as being extremely expedient for synthesizing well-defined sounds (abstract).

Therefore, it would have been obvious to one of ordinary skill at the time of invention to modify the speech enhancement system of Liu to implement transient detection and estimation in conjunction with signal and background noise estimation, for the purpose of improving synthesis, as suggested by Fink et al.

Comparing time-frequency representation with a signal model is taught by Liu at Figure 5: col. 10, lines 16-23;

Determining a template in the signal model is taught by Liu at Figure 5: col. 10, lines 16-23;

Replacing the acoustic input signal is taught by Liu at col. 10, lines 16-23.

Liu does not specifically teach replacing the acoustic input signal with a low-noise output signal comprising a mix of the input signal and the best matching template. However, refer to Miseki et al. who teach a method for encoding and decoding a speech signal including background noise wherein an input signal is separated into a speech component and a background noise component (isolating sounds) and a multiplexer multiplexes the data of the two components to produce a low-noise output signal (abstract), for the purpose of efficiently encoding and decoding a speech signal which includes background noise such that the compressed speech is as close to the original speech as possible (col. 1, lines 6-11).

Therefore, it would have been obvious to one of ordinary skill at the time of invention to modify the speech enhancement system of Liu to implement replacing the acoustic input signal with a low-noise output signal comprising a mix of the input signal and the best matching template, as suggested by Miseki et al, for the purpose of efficiently encoding and decoding a speech signal which includes background noise such that the compressed speech is as close to the original speech as possible, as suggested by Miseki et al.

Liu does not specifically teach transient detectors to detect transient duration. However, detecting transient or noise duration was well known in the art.

In a similar field of endeavor, Gupta teaches a method and device for comfort noise generation for echo cancellers, which implements hangover delay periods and signals within the delay period are excluded from the noise buffer. Gupta teaches that such exclusion provides constant and continuous background noise and avoids perceptible variations in the noise characteristics of the channel.

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Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the system of Liu to implement detecting noise duration as taught by Gupta, for the purpose of ensuring the detected background noise is actually background noise and not other variations, thereby ensuring an adequate background noise estimation and an improved speech enhancement system.

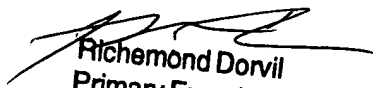
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela A. Armstrong whose telephone number is 703-308-6258. The examiner can normally be reached on Monday-Thursday 7:30-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

Angela A. Armstrong
Examiner
Art Unit 2654

AAA
July 25, 2003


Richemond Dorvil
Primary Examiner